Institutional change and market conditions for low-carbon electricity transition in Vietnam

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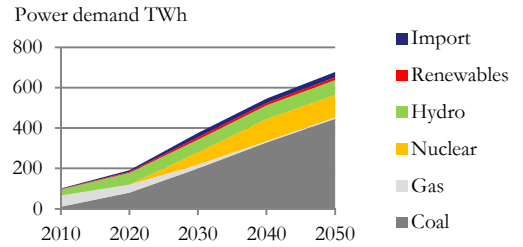
Abstract— The paper develops a mesoeconomic approach to the low-carbon electricity transition in Vietnam. We argue that political will is a necessary but insufficient condition for such a change. In this perspective, we identify key players, and point out the institutional and structural characteristics of the electricity market which may impede the take-off of renewable resources. Indeed, the transition process depends on interdependent organizational decisions and implies a fundamental transformation of the stakeholders' positions and relations. In particular, it necessitates the existence of a critical mass of initiating actors that perceive the benefits of investing in renewables and have the leverage to redefine the rules of the game, therefore modifying the institutional framework and enabling the constitution of new structural interdependencies inside the electricity system. During the current period, the conditions of the wholesale market appear as a determining factor in relation to the pace of the low-carbon transition. Then, we propose an analytical grid to apprehend the change path by following the trend in some focal variables. Among others, feed-in tariff and subsidies to the single-buyer indicate the balance of power between the major stakeholders and reflect the stages of the transition process.

Keywords: Electricity market, Low-carbon transition, Renewable energies, Stakeholders' interactions, Institutional change, Vietnam

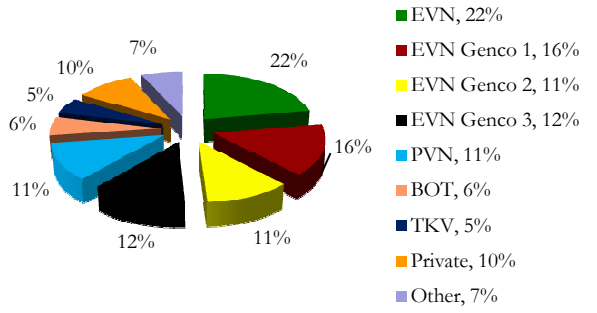
1. Increasing power consumption and CO_2 emissions

Vietnam	Unit	1995	2000	2005	2010
Power consumption	TWh	14	27	54	99
GDP	US$	21	31	53	104
GDP/capita	US$/habitant	289	402	642	1204
CO2e (in energy sector)	Million tons	30	53	80	113
Population	Million	72	77.6	82.4	86.9

2. Renewable energy is increasing but not much as its potential in Vietnam



3. Players in the power generation sector in Vietnam in 2013



4. Analytical framework

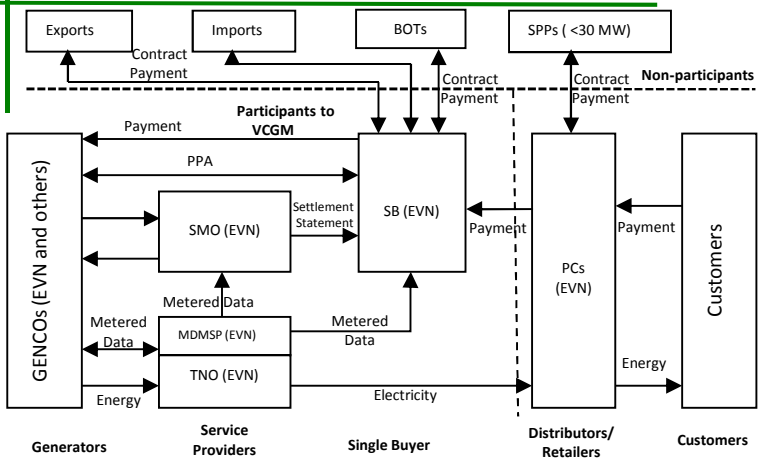
A mesoeconomic approach of the energy transition process.

Structural characteristics of the Vietnamese energy sector: concentration of political power, hierarchical dependencies, weak civil society, economic decentralization, informal networking and bargaining . The political will of policymakers is a necessary but insufficient condition for energy transition.

If no major energy crisis occurs during the next few years, the transition in the Vietnamese electricity market should be of an evolutionary rather than a revolutionary nature. Four transition phases according to the nature and speed of change: *pre-development*, *take-off*, *acceleration* , *stabilization*.

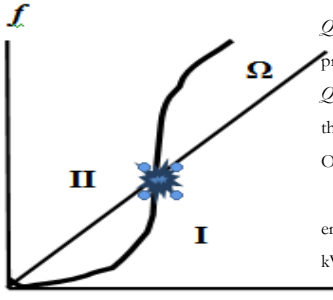
- Change would be driven by institutional entrepreneurs who may occupy a peripheral position in the system and perceive the opportunity to gain by changing the rules of the game.
- Either the innovative players remain isolated or they dominate by weakening the opposing parties and by drawing them into the path of change.

5. The Vietnam Competitive Generation Market (VCGM) 2014



EVN: Electricity of Vietnam; GENCO: Generation company; SMO: System & Market Operator; PPA: Power Purchase Agreement; PCs: Power companies; BOT: Build-Operation-Transfer; TNO: National Transmission Operator

6. Focal variables and change path



Quadrant I: Feed-in tariff paid to wind energy producers (onshore) is less than 11 U.S. cents per kWh

Quadrant II: Feed-in tariff paid to wind energy higher than 11 U.S. cents per kWh ➔ renewable energy-Oriented players improve their position.

: Feed-in tariff paid to wind energy producers (onshore) is equal to 11 U.S. cents per kWh ➔ balance of power switching point.

7. Conclusions

A mesoeconomic approach enables us to decipher the interests of electricity market actors, their constraints and the mechanisms that could strengthen their commitment to renewable resources and inflect fossil-oriented strategies.

The resistance of fossil-oriented actors in relation to the government's concerns about energy security is not favorable to a radical restructuring of the market.

The central role of the wholesale market's interrelations and regulation mechanisms is highlighted.

Three conditions may ensure the continuation of the energy transition, encourage institutional entrepreneurs and overcome carbon lock-in:

- Gradual entry of new players on the competitive market,

- Increase in the feed-in tariff paid to suppliers of energy produced from renewable sources,

- Increase in subsidies enjoyed by the single-buyer to offset its losses due to the growing share of renewable resources in electricity production.